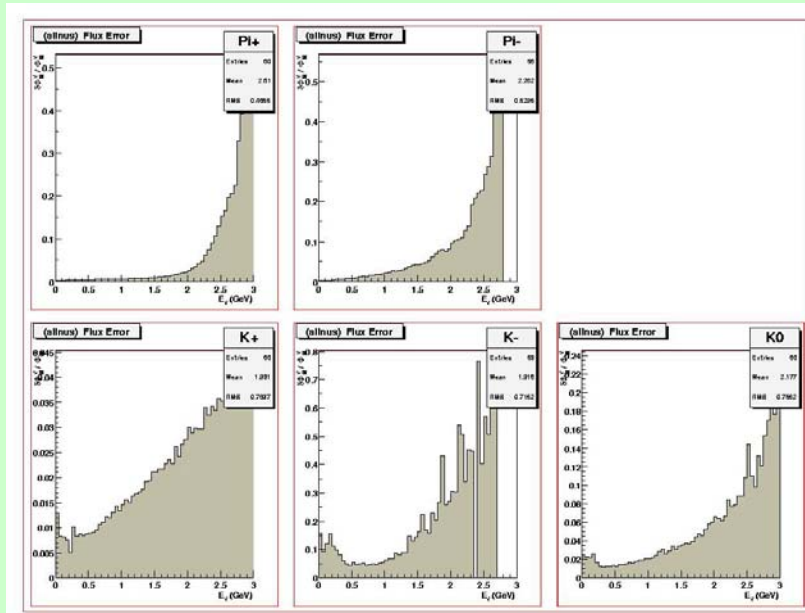


MiniBooNE Flux Uncertainty Arising from Finite HARP Statistics

- Consider ν_μ and ν_e flux combined as well as ν_e 's from kaon decay alone.
- Flux uncertainty as a function of parent meson and neutrino energy.
- Flux uncertainty as a function of parent meson averaged over all neutrino energies.
- Uncertainties studied for 4π geometrical coverage as well as for forward analysis only.

Neutrino Flux Uncertainty Achievable from 1.4M HARP Events. (4π geometrical acceptance)



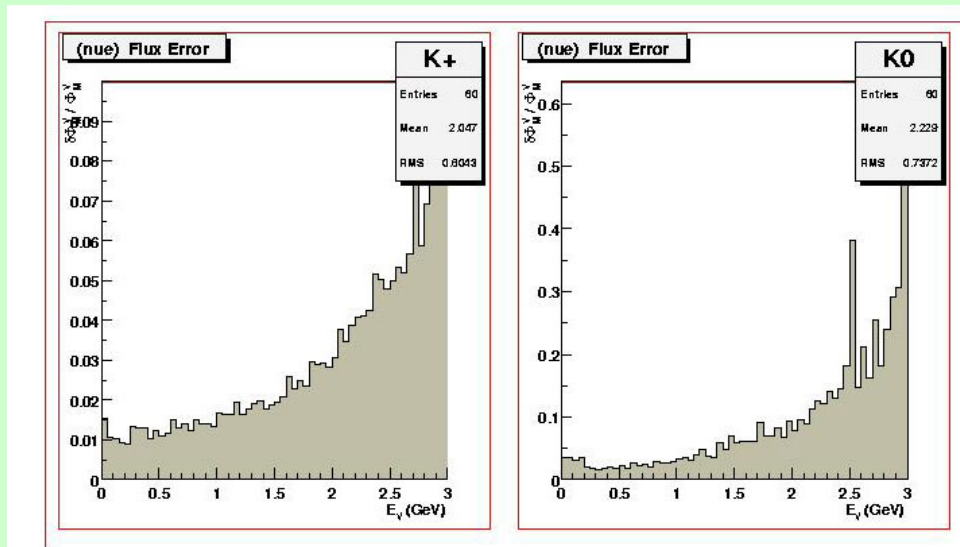
Uncertainty integrated
over neutrino energy.

Parent Meson	ν Flux Uncertainty
π^+	0.6%
π^-	1.4%
K^+	2.2%
K^-	9.7%
K^0	3.1%

ν_μ and ν_e combined flux uncertainty
verses neutrino energy for 5 parent
meson types (π^+ , π^- , K^+ , K^- , K^0)

*statistical error only

ν_e Flux Uncertainty Achievable from 1.4M HARP Events. (4π geometrical acceptance)



Uncertainty integrated
over neutrino energy.

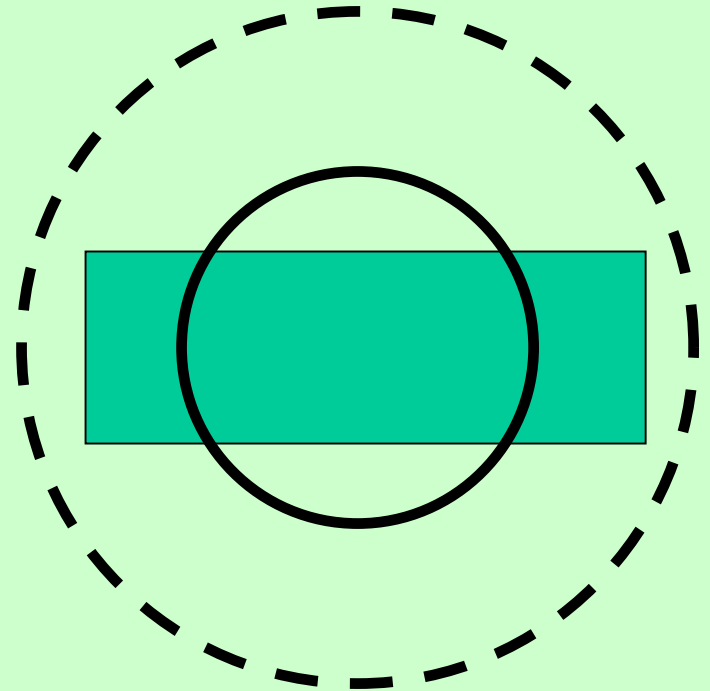
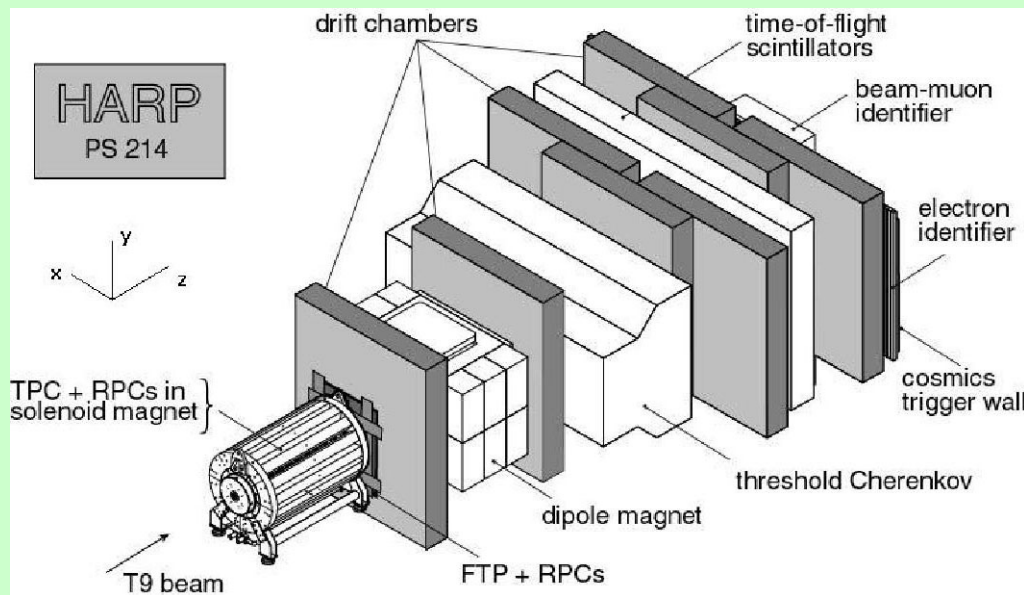
Parent Meson	ν_e Flux Uncertainty
K^+	2.2%
K^0	4.5%

ν_e flux uncertainty from kaon decay
verses neutrino energy.

*statistical error only

HARP Forward Analysis

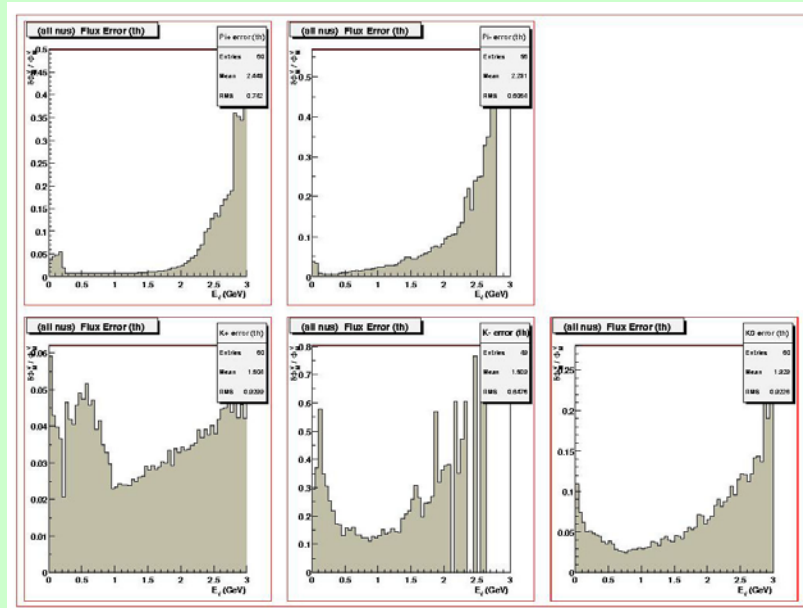
(excluding the TPC)



Statistics reduced accordingly for partially detected cones.

100% uncertainty assumed for undetected cones.

Neutrino Flux Uncertainty Achievable from 1.4M HARP Events. (forward analysis only)



Uncertainty integrated
over neutrino energy.

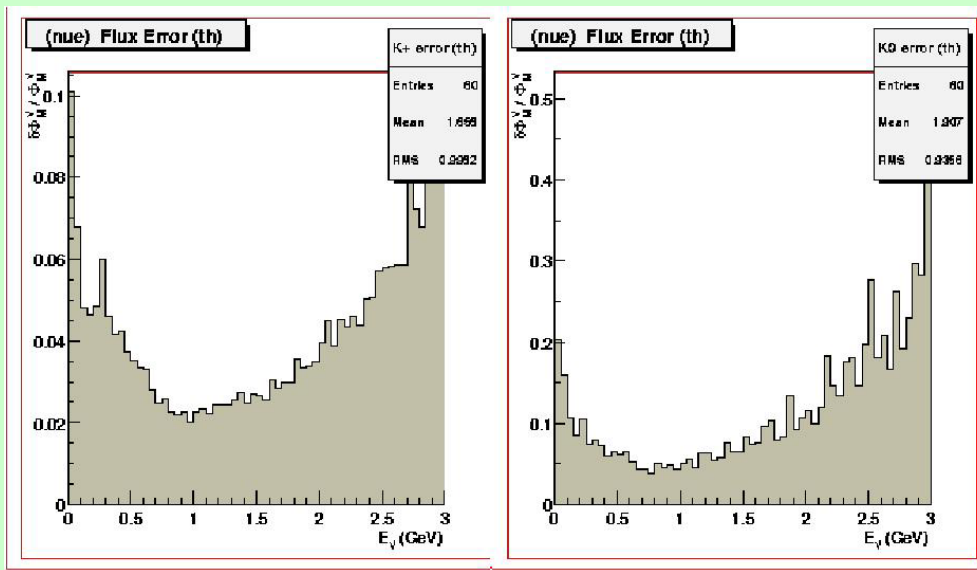
Parent Meson	ν Flux Uncertainty
π^+	1.1%
π^-	2.2%
K^+	3.3%
K^-	16.8%
K^0	4.7%

ν_μ and ν_e combined flux uncertainty
verses neutrino energy for 5 parent
meson types (π^+ , π^- , K^+ , K^- , K^0)

* Additional uncertainty
mainly at low energies.

*statistical error only

ν_e Flux Uncertainty Achievable from 1.4M HARP Events. (forward analysis only)



Uncertainty integrated
over neutrino energy.

Parent Meson	ν_e Flux Uncertainty
K^+	3.6%
K^0	7.8%

ν_e flux uncertainty from kaon decay
verses neutrino energy.

* Additional uncertainty
mainly at low energies.

*statistical error only